Ecology for Survival

LIKE SPRING IN New England, ecology has burst forth almost overnight. Student activists, politicians of all parties and the public alike, all seem to have pounced upon ecology as though it were a blessed relief from the disruptions and negativism which have so recently and so unproductively dominated the scene. Whether this be so or not, a word which even a few months ago was comparatively unfamiliar is now commonplace and the subject matter is receiving national attention.

There is no question that this is long overdue. The interactions between man and his environment are becoming not only matters of health and well-being but even of life or death. For the first time in earth history a living species is in a position to dominate and control its own evolution and to a large extent the environment in which it must live. And for the first time in human history, the land, sea and air frontiers, which seemed so limitless and so obviously there for man's use and exploitation, have begun to close in, leaving man for the first time with no escape, nowhere else to go. All this has changed the rules of the game and changed them profoundly. The reality has only just begun to dawn upon the collective human consciousness. Man lives in a closed biological system which he has the capability to influence profoundly and which itself has the capability to make him ill or to snuff out his very existence.

The nature of this closed system and its implications for human health and well-being, as well as for survival, have so far received only the most superficial examination. As man has prospered and as his technology and numbers increased, his frontiers and even his resources have been closing in to place unforeseen limits and restrictions upon what he may do or may not do if he would remain healthy, enjoy well-being or even survive as a living species. Within this closed system just about everything affects everything else. If ecology is the term to be used, it should be understood that its subject matter must include not only the effect of man's science and technology upon the environment, but also the vagaries of human nature and human behavior which determine so much of what humans do and do not do. In this sense the social, economic and political systems of man, which reflect human activity, are part and parcel of the overall earth system, the closed biosphere.

The challenge is awesome. Man's domination means that what he does individually and collectively will largely determine the health and well-being of the earth system and its living inhabitants. There is appallingly little knowledge of what should be done, and less still of experience or expertise in how to do it. Beyond the efforts to control population expansion and the pollution of air, land and water which occupy most of the current interest, there are many other even more fundamental problems to be dealt with. Among them are deeply rooted and sometimes less than noble traits in human nature, including some that may be pathological. There are real weaknesses in the ability of any democratic society to make long-range plans of any kind, where the tradition is to oust the incumbents at reasonably frequent intervals, and the game is to plan more for the next election than for the next generation. A further problem is that humanity as a whole is made up of many groups of autonomous peoples who are in various stages of social and industrial development, and whose global concerns are therefore various and often conflicting. Individual humans also are inevitably in various stages of social and

psychological maturity and thus with different and often conflicting values. And perhaps most basic of all will be the question of individual rights. It will be necessary, but difficult, somehow to achieve the necessary discipline in human behavior, whether this be in procreation or whatever, in the common interest of humanity without unduly infringing upon the rights of individual well-being and self-fulfillment for which the human race has been fighting so hard for so long.

For many years there have been pioneering efforts to draw attention to ecological problems and to do something about them. The pioneers are to be found among the family planners and the conservationists. Progress has been slow and opposition from powerful moral and economic interests has been strong. Now quite suddenly ecology is "in." The present danger is that this may prove to be a mere flash in the pan when what is needed is the sustained heat and energy of a controlled nuclear reaction. This is a task not just for the 1970s but for the whole rest of the life span of humanity.

Carotid Sinus Stimulation For the Treatment Of Angina Pectoris

DURING THE PAST DECADE several important new therapeutic approaches for the treatment of the clinical syndrome of angina pectoris have been developed. It is now generally accepted that the basic cause of angina pectoris is inadequate delivery of oxygen to the myocardium for its demands or needs to perform a specific task. Recently, however, the new approaches to therapy for this clinical condition have resulted from important physiological observations on control of coronary blood flow and a better understanding of hemodynamic and biochemical factors relating to the initiation of the anginal syndrome. Some of these are a clear demonstration that a rise in arterial blood pressure frequently precedes an attack of spontaneous angina pectoris, that factors which enhance sympathetic nervous stimulation to the heart increase myocardial oxygen consumption by increasing heart rate and the rate at which the left ventricle develops tension,[1] that anaerobic metabolism and lactate production occur during myocardial ischemia, and that the parasympathetic nervous system may play a role in controlling coronary vascular resistance.[2] Utilizing these physiologic concepts, several new modes of therapy have been proposed for treating patients with incapacitating angina pectoris. Propranolol was introduced for treating patients with angina pectoris with the concept that blocking excessive sympathetic stimulation to the heart would allow an individual to perform more work with less demand for increased myocardial oxygen delivery.[3,4] Furthermore, combination therapy with nitrites and propranolol has been advocated to lower blood pressure acutely and to inhibit sympathetic stimulation of the myocardium.

More recently, Braunwald and his colleagues have introduced the concept of carotid sinus stimulation for relieving angina pectoris and allowing patients to perform more exercise without developing angina, or for treatment of established anginal attacks.[5,6] The Specialty Conference appearing elsewhere in this issue presents the physiological basis on which this treatment was introduced and a report of preliminary experience with its use in patients with incapacitating angina pectoris. For many years it has been known that the circulatory response to carotid sinus stimulation included reductions in heart rate, in arterial pressure and in systemic vascular resistance. All of these responses would be expected to reduce angina pectoris, and it was on these principles that Lown and Levine in 1951 proposed a diagnostic test for the relief of angina pectoris by carotid sinus stimulation.[7] A number of physiological studies utilizing the carotid sinus stimulator have clarified the circulatory response to repeated carotid sinus stimulation in awake unanesthetized man.[8] The decrease in arterial pressure, which is far greater than the decrease in heart rate and in cardiac output, appears to be the major factor in preventing the occurrence of angina pectoris and in relieving already established attacks. The observation that patients who use the carotid sinus stimulator for several months